



Psychometric Properties of a Scale on Behaviours Related to Corruption

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Abstract. The aim of this study is to assess the psychometric properties of the ‘Corruption Normalisation Scale’ in students from a private university in Metropolitan Lima across 10 schools. The study has an instrumental design and involves the participation of 1,572 university students between the ages of 18 and 29, who belong to 10 different schools within the university. Using the McDonald Omega coefficient, item, exploratory and confirmatory factor, and internal consistency reliability analyses were conducted. The quality of the scale has been tested, obtaining high levels of validity and reliability. Although initially designed as a one-dimensional scale, the results suggest a three-factor structure comprising fraud, deception and transgression.

Keywords: Fraud · Deception · Transgression · Psychometric Properties · College Students

1 Introduction

The 2022 Corruption Perceptions Index (CPI), a global measure of corruption in the public sector [1], reveals that the levels of corruption among the countries surveyed have remained significantly stable over the last 11 years. Although this could be considered a significant step forward in the fight against corruption, it is evidenced that no concrete policies have been implemented to reduce corruption. According to the CPI, 95% of the 180 countries assessed have demonstrated little progress [1].

Over the last 11 years, Peru’s score on the CPI has not significantly changed (2012–2014: 38, 2015: 36, 2016: 35, 2017: 37, 2018: 35, 2019: 36, 2020: 38, 2021–2022: 36) [1]. According to the global average released by the CPI 2022, Peru ranks 101 out of 180 countries, which is a concerning position shared with countries scoring below 50 (36/100) on the scale from zero (very corrupt) to 100 (very low corruption) (Transparency International, 2022). Corruption remains one of the main challenges for Peru, severely weakening citizen security, institutionality, democracy and trust relations.

A recent report from the National Corruption Observatory [2] has indicated that as of March 2023, more than 8,000 public officials are involved in acts of corruption. Adding to this, Peru has the highest number of former presidents under investigation, among them one already convicted [3, 4]. Therefore, the outlook in terms of citizen example and

professional performance is not appealing. Dishonest behaviours such as transgressing the rules, cheating or betting on behaviors associated with the so-called ‘deception’ implies engaging in dishonest acts [5] that prioritise personal gain at the expense of the common good [6–8]. Dishonest behaviours in professional performance may be influenced by earlier stages of training [5, 6], including the university stage [9, 10]. Bolívar [6] mentioned that responsible professionals cannot be prepared without ethical education that addresses the problems of their environment. Therefore, it is advisable to conduct in-depth studies on how such dishonest behaviour manifests itself among university students and offer alternatives to tackle this issue [11]. For this purpose, robust instruments that allow for the measurement of corruption-related behaviours in the formative stage of future professionals are crucial.

1.1 Psychometric Properties of a Measuring Instrument

Evaluating the psychometric properties of a scale is an essential criterion for assessing its accuracy, with validity and reliability being the two essential metric characteristics [12]. A significant number of studies have demonstrated a lack of scientific rigor largely owing to the lack of evidence of the validity and reliability of the instruments used [13, 14]. Validity is the meaning of the scores obtained on an instrument [15]. In other words, validity refers to the degree to which evidence and theory support the interpretations of the measures [16, 17]. Reliability refers to the consistency of an instrument in showing similar results, free of error, in repeated measurements [16]. Although reliability is an indispensable condition, it is often inadequate to ensure the validity of an instrument [17].

The above is an ongoing process that invites eventual modifications to confirm that an instrument has evidence of robust validity and reliability [18, 19]. This evidence becomes more consistent the more psychometric properties have been measured in different contexts, cultures and populations [12].

Freundt-Thurne and Tomás-Rojas [20] developed a ‘Corruption Normalisation Scale’ to evaluate common corruption-related behaviours in university students. The authors determined evidence of content validity by consulting 12 experts on topics related to common behaviours and corruption, after which Aiken’s V coefficients were calculated [21]. Construct validity was performed using exploratory factor analysis (EFA). Reliability was determined through the evaluation of internal consistency, obtaining an $\text{Alpha} = 0.83$ and $\text{Omega} = 0.84$. The 19-item instrument was determined to be one-dimensional. Freundt-Thurne and Tomás-Rojas [20] applied the scale to 340 private university students in Lima and recommended that it be tested on larger samples from the Peruvian university environment. Following this recommendation, the scale was applied to a larger and varied sample. While the evidence of validity and reliability of the scale in a certain university population has already been determined, it is important to remeasure it when it is used in other areas or populations [12].

The aim of this study is to assess the psychometric properties of the ‘Corruption Normalisation Scale’ among students from 10 schools at a private university in Metropolitan Lima.

2 Methodology

To confirm the one-dimensional structure of the ‘Corruption Normalisation Scale’ [20], this study is positioned in the positivist paradigm whose design is instrumental [22]. The study was conducted in the last quarter of 2021. The sample was 1,572 first- and third-year university students between the ages of 18 and 29 ($M = 19.15$, $SD = 1.75$), constituting 31% of the population. It was selected by non-probabilistic convenience sampling [23], consisting of 50.7% males and 49.3% females, from 10 schools (Business, Communications, Contemporary Arts, Design, Economics, Engineering, Hotel and Tourism Administration, Human Sciences, Architecture, and Law) of a private university located in Metropolitan Lima.

The corresponding ethical considerations were considered. All students gave their consent [24]. The objectives of the study were explained to them, specifying the importance of anonymity, as well as the confidentiality of the information collected.

The data were analyzed using the following programs: IBM SPSS Statistics 25, IBM SPSS Amos 23 and JASP 0.16. The item analysis (descriptive and homogeneity), EFA and confirmatory factor analysis (CFA) were conducted, considering the measures of adjustment to the corresponding model (X^2 , X^2/df , RMR, TLI, CFI and RMSEA). An analysis of internal consistency was conducted using McDonald’s Omega [25] and their corresponding confidence intervals.

3 Results

3.1 Item Analysis

Table 1 presents that the mean of item 19 is higher than those of the others ($M = 2.44$; $SD = 1.08$), and the mean of item 17 is the lowest of all ($M = 1.08$; $SD = 3.81$). Several items have skewness and kurtosis values greater than ± 1.5 [26, 27], indicating non-normal distribution. Finally, all items were retained because their corrected item-test correlations were greater than .20 [28].

3.2 Factor Analysis

Table 2 presents the adjustment measures of the one-dimensional model of the ‘Corruption Normalisation Scale’, obtained from the CFA. However, the achieved values did not reach the optimal criteria.

Given that the results were not optimal for the one-dimensional model, it was decided to carry out an AFE, fulfilling the initial assumptions ($KMO = .92$; $X^2(171) = 8383$; $p < .001$). The method of least residuals [29] and parallel analysis [30] determined the conformation of five factors in which the 19 items of the instrument were distributed, which can be observed in Table 3. This new conformation of the instrument explained 41.50% of the variance of the construct, considering only items with factorial weights equal to or greater than .30 [31]. Items 8, 11 and 15 were placed in two factors at the same time, so it was decided to place them in the factor where they obtained the highest factor loadings.

Table 1. Analysis of items from the 'Corruption Normalisation Scale'.

Items	M	SD	g1	g2	ritc
1. You kept change knowing that you were given more than needed.	1.75	0.87	1.05	0.78	.41
2. You offered money, gifts, or favors in exchange for faster service.	1.62	0.86	1.28	0.99	.42
3. You kept something borrowed, knowing that you should return it.	1.67	0.77	0.96	0.48	.45
4. You gave a false excuse to a teacher to justify your absence from a class.	1.82	0.87	0.78	-0.07	.55
5. You gave a false excuse to your parents to justify where you were.	2.13	0.95	0.35	-0.62	.52
6. You skipped in a line.	1.75	0.84	0.83	0.00	.40
7. You used contacts at an institution to obtain preferential treatment over others.	1.38	0.74	2.13	4.60	.48
8. You bribed an authority (police, teachers, etc.)	1.12	0.47	5.08	29.57	.48
9. You cheated on an exam.	1.86	0.82	0.70	0.26	.54
10. You submitted other people's work as your own.	1.16	0.49	3.95	19.46	.47
11. You took something without paying, on purpose.	1.21	0.55	3.29	13.56	.53
12. You lied about your age to obtain a benefit (clubs, Facebook, movies, gambling, betting).	1.75	0.95	1.11	0.58	.49
13. You forged a signature on a document.	1.39	0.72	2.06	4.44	.54
14. You tampered with information in a document.	1.15	0.49	4.13	20.92	.59
15. You intentionally used counterfeit money to pay for a service or product.	1.15	0.45	4.08	22.81	.51
16. You used someone else's ID to get in somewhere or get something done.	1.10	0.42	5.25	32.63	.43
17. You requested academic benefits (enrollment, payment, requirements, withdrawals, etc.) with false and/or incomplete arguments.	1.08	0.38	6.12	46.66	.51

(continued)

Table 1. (continued)

Items	M	SD	g1	g2	ritc
18. You had your college homework done by someone else.	1.11	0.43	4.81	28.11	.44
19. You bought pirated products (movies, music, software, etc.).	2.44	1.08	0.26	-0.55	.39

Note: M = Mean; SD = Standard Deviation; g₁ = Asymmetry; g₂ = kurtosis; r_{itc} = Corrected item-test correlation

Table 2. Statistical adjustment measures of the ‘Corruption Normalisation Scale’.

Model	X2 (df)	X2(df)	RMR	TLI	CFI	RMSEA [90%CI]
One dimensional	1760.23 (152)	11.58	.04	.78	.81	.08 [.08-.09]

Note: χ^2 = Chi square; df = Degrees of freedom; RMR = Average residual root; TLI = Tucker-Lewis Index; CFI = Comparative Fit Index; IFI = Incremental adjustment index; RMSEA = root mean square error of approximation; CI = Confidence intervals

Factors 4 and 5 are composed of only two items, which is not acceptable and should be discarded as they do not reach the minimum number of items per factor [32]. In this sense, only the first three factors would be retained. Factor 1 is composed of the following items: ‘You intentionally submitted other people’s work as if it was your own’, ‘You intentionally took something without paying’, ‘You intentionally used fake money to pay for a service or product’, ‘You requested academic benefits (tuition, payment, requirements, withdrawals, etc.) with false and/or incomplete arguments’, ‘You bribed an authority (police, teachers, etc.)’ and ‘You had your college homework done by someone else’.

Factor 2 is composed of the following items: ‘You kept something you borrowed even though you knew you were supposed to return it’, ‘You gave a false excuse to a teacher to justify missing a class’, ‘You gave a false excuse to your parents to justify where you were’, ‘You cheated on a test’ and ‘You bought pirated products (movies, music, software, etc.)’. Finally, Factor 3 is composed of the following items: ‘You lied about your age to obtain some benefit (club, Facebook, movie theater, gambling, betting)’, ‘You forged a signature on a document’, ‘You falsified information on a document’ and ‘You used someone else’s ID to enter a place or get something done’. To confirm the new respecified structure of the ‘Corruption Normalisation Scale’, a new CFA of this three-factor model was conducted. Table 4 presents the fit measures obtained, showing optimal values.

Table 3. Exploratory factor analysis of the 'Corruption Normalisation Scale'.

Items	P1	P2	P3	P4	P5
P17	0.67				
P15	0.62				0.32
P18	0.61				
P10	0.51				
P11	0.44				0.31
P8	0.38			0.35	
P4		0.74			
P9		0.64			
P5		0.43			
P3		0.40			
P19		0.38			
P14			0.72		
P13			0.64		
P16			0.38		
P12			0.33		
P2				0.55	
P7				0.53	
P1					0.46
P6					0.44
% Var.	12.89	10.41	7.68	5.28	5.22

Table 4. Statistical adjustment measures of the 'Respecified Corruption Normalisation Scale'.

Model	X2 (df)	X2(df)	RMR	TLI	CFI	IFI	RMSEA [90%CI]
Three factors	514 (74)	6.95	.05	.91	.93	.81	.06 [.06-.07]

Note: χ^2 = Chi square; df = Degrees of freedom; RMR = Average residual root; TLI = Tucker-Lewis Index; CFI = Comparative Fit Index; IFI = Incremental adjustment index; RMSEA = root mean square error of approximation; CI = Confidence intervals

3.3 Reliability Analysis

Reliability was tested using the McDonald Omega coefficient [25] and its confidence intervals, which are presented in Table 5. Having found ω coefficients $>.65$, there is evidence that reliability is good in all its factors.

Table 5. Internal consistency reliability of the ‘Respecified Corruption Normalisation Scale’.

Factors	Ω	CI95%
Factor 1	0.79	[0.77–0.81]
Factor 2	0.72	[0.70–0.74]
Factor 3	0.66	[0.64–0.69]

Note: ω = McDonald’s Omega coefficient; CI95% = Confidence interval

4 Discussion

The ‘Corruption Normalisation Scale’ was initially one-dimensional, but the results suggested a three-factor structure characterising habitual corruption-related behaviours. Consequently, this study confirms the convenience of continuing to search for evidence of validity and reliability in an instrument as a relevant and necessary practice, as has already been indicated by several authors. Having confirmed the consistency of the respecified instrument in three factors, it was appropriate to name the items of each factor that made up the scale based on the common elements found, considering the theory on habitual behaviours related to corruption.

The set of Factor 1 judgements represents behaviours with a higher level of illegality that are harmful, to some degree, to one or more persons impacted by such behaviours. They involve not so much mischievousness or audacity but bad faith and, at least, a certain amount of indifference to the possibility of causing harm in the pursuit of self-interest. In relation to all this, the word ‘fraud’ is the appropriate word for this factor.

According to Corominas’ etymological dictionary [32, p. 281], ‘fraud’ is derived from the Latin ‘fraud, -dis’, which means ‘bad faith, deceit, prejudice’. The Dictionary of the Real Academia Española, in its first definition, defines it as an ‘action contrary to truth and rectitude, which harms the person against whom it is committed’ [34]. In fact, submitting someone else’s work as one’s own (item 10), intentionally taking something without paying (item 11), using fake money (item 15), requesting academic benefits with false pretenses (item 17), bribing an authority (item 8) and having one’s own homework done (item 18) leads to causing significant harm to one or more people, directly or indirectly. Precisely because of this trait of ill will, the actions that constitute this factor have a low level of social acceptance and are therefore difficult to recognise.

The behaviors described in Factor 2 represent ‘normalised’ behaviours and have a high level of tolerance or acceptance in the social sphere. For this reason, they are more easily accepted and assimilated, even being recognised as having a certain amount of liveliness or mischievousness [7, 35, 36]. In relation to this, the title chosen for this factor is ‘deception’. Unlike Factor 1, it is not appropriate to use etymology to support selecting the title, as the etymological origin of the term ‘deception’ is convoluted, which can be verified by reviewing the definition proposed by Corominas [33].

Literature has indicated that deception shows a sort of double standard [37]. There, creativity is primarily used for personal gain rather than for the common good, justifying the end regardless of any type of behaviour or choice of means [7, 37]. A philosophy

that weakens the power of rules, the sense of responsibility and respect for citizenship and the legitimate appreciation for the common good is thus put in place [7, 35, 38].

Deception is based on the popular belief that if someone else does it, you can do it too [35, 39]. It seems that it is the opportunity in terms of enjoying an advantage for one's own benefit that determines this type of behaviour, especially if there are no immediate negative consequences [38]. Keeping something borrowed knowing that it should be returned (item 3), giving a false excuse to a teacher (item 4) or to one's own parents (item 5) to justify a situation, cheating in exams (item 9) or buying pirated products (item 19) demonstrate precisely the attitude of an intentionally creative double standard in the way of circumventing the regulations, which would aspire to be justifiable, especially because it is considered common and acceptable, all of which is characteristic of the so-called 'deception'.

Factor 3 judgments represent behaviours that involve circumventing the ordinary and correct paths to reach a given end, seeking to take illegitimate shortcuts. Accordingly, one can find the appropriate label for this factor in the word 'transgression'. This term has its etymological origin in the Latin 'transgredi', which means 'to pass through' [33]. Lying about one's age to obtain a benefit (item 12), forging a signature (item 13) or falsifying information (item 14) in a document and using someone else's ID card to enter a place or get something done (item 16) are precisely ways of shortening a path or shortening a process improperly based on one's own interest.

While transgressing has a connotation related to breaking the legal order and the violation of order [34], it encompasses some daring and has developed a tinge of normality in popular culture [7, 40], which could justify a certain degree of social acceptance. Based on the above, the titles defined for the three dimensions are as follows: fraud (Factor 1), deception (Factor 2) and transgression (Factor 3).

5 Conclusions

This study provides evidence of validity and reliability of the 'Re-specified Corruption Normalisation Scale', which aims to collect information on common corruption-related behaviors of university students. The quality of the tool has been tested, and it obtained high validity and reliability indexes. However, the fit values produced by the CFA, while acceptable, could be improved. Initially, the instrument had one dimension, but the results suggested a structure of three factors that characterise habitual behaviours related to corruption. These factors comprise fraud, deception and transgression. Theoretically, these three factors share the characteristics related to timeliness and lack of reflection at the time of execution.

In the future, the study could be replicated in several samples to confirm the multidimensional structure and check if its accuracy is maintained over time. This study has two limitations. The first is social desirability. Although anonymity is maintained to control it, individuals may feel sensitive and may not admit to having engaged in some of these behaviours on a continuous basis. The second limitation is that although variability has been achieved by taking samples from different schools, they correspond to a single particular university. Therefore, the findings should not be generalised.

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